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ABSTRACT

A study was conducted to demonstrate that originality can be facilitated in elementary school children. Research has shown that a training procedure designed to elicit uncommon responses will facilitate original responses on subsequent tasks. Ss were 96 fifth- and sixth-graders. Half were randomly assigned to a group given originality training (OT), while the other half received repetition training (RT) as a control procedure. Each group was comprised of 24 males and 24 females. Each S was tested individually with pretests, training tests, and post tests. The Similarities, Instances, and Pattern Meanings tests were used as pre- and post-originality measures, while the Alternate Uses and Line Meanings tests were used for training. OT Ss were instructed to make different responses each time the test was presented, while RT Ss were instructed to repeat the same response. The only significant finding from the pretraining data was that females emit a greater number of responses to similar stimuli than do males. Post-training results support the hypothesis that originality training facilitates the production of original responses. It was also found that the frequency of responses increases following originality training. (KM)

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TRAINING ORIGINALITY IN ELEMENTARY SCHOOL CHILDREN

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The major purpose of this study was to demonstrate that originality can be facilitated in elementary school children. Maltzman, Simon, Raskin, and Licht (1960) assume that originality is a learned phenomenon and that the same principles of conditioning hold as in other forms of operant behavior. Research utilizing college undergraduates as *S*s has demonstrated that a training procedure designed to elicit uncommon responses will facilitate original responses on subsequent tasks.

Maltzman et al. (1960) operationally define original performance as the ability to produce ideas that are statistically infrequent for the population of which the individual is a member. Uncommon associations are evoked and reinforced by his originality training procedure. Maltzman et al. assume (*a*) that the *S*'s satisfaction in fulfilling the instructions is the reinforcing agent and that the occurrence of any previously established intraverbal association is self-reinforcing and (*b*) that uncommon responses are more strongly reinforced than common responses and that this reinforcement generalizes to other uncommon responses. In the present investigation it was hypothesized that *S*s receiving originality training would show a greater mean increase in originality from pretraining tests to posttraining tests than *S*s receiving repetition training.

METHOD

Subjects. Ninety-six fifth- and sixth-grade students (aged 9 through 12 yr.) from the West Laboratory School in Miami, Florida, participated in this study. The children came from an essentially middle-class, predominantly white background. Half of the *S*s were randomly assigned to a group given originality training (OT), while the other half received repetition training (RT), a control procedure utilized by Maltzman et al. (1960). The groups were formed so that each group was comprised of 24 males and 24 females. The groups were similar with regard to age (M = 11 yr. for both groups) and grade level (M = 5.5 for OT, 5.4 for RT). Although no attempt was made to control for intelligence in the selection of the *S*s, an analysis of variance performed on available California Mental Maturity IQs yielded no significant differences.

Procedure. Each child in the study was tested individually by the *E*. Testing was performed in a small room where distraction from disturbing stimuli was at a minimum. The *E* introduced himself as being interested in children's games and avoided any reference to "testing." When the child appeared at ease, he was presented with a booklet which contained the pretests, training tests, and posttests. Separate instructions were given for each "game," with particular emphasis on the fact that there were no right or wrong answers and no time limits.

Tests of originality and training. Five test instruments were used in the assessment and training of originality. The Similarities, Instances, and Pattern Meanings tests were employed as pre- and postoriginality measures, while the Alternate Uses and Line Meanings tests were used for training. For a more detailed description of these instruments, the reader is referred to Wallach and Kogan (1965).

In each child's test booklet, half of the Similarities, Instances, and Pattern Meanings tests were first presented. Each *S* then either received OT or RT. In this training period, all children were exposed to the Alternate Uses and Line Meanings tests but with different instructions. The instructions for OT *S*s were as follows:

> This game is a little different than the ones you have had so far, so pay careful attention to the directions. Below eight objects will be listed and it is your job to write down *one* way that that object could be used. For example, a string can be used to attach a fish hook, to jump rope, to hang clothes and many others.

After all eight items were completed, the entire list was repeated on the next page. The following instructions were given before the next trial:

> Below the same eight objects are listed as on the previous page. For each item you are to write down *one* way that the object could be used. There are no right or wrong answers, but be sure you put down a *different* use than you gave before.

This same procedure was used for a total of five presentations. The child was then shown the six items of the Line Meanings test with similar instructions as those for the Alternate Uses test.

The same materials were used for the RT group. The only difference was that *S* was instructed to repeat the same response on each repetition.

RESULTS AND DISCUSSION

Six dependent variables were measured before and after training for each child. Three of the variables were fluency scores: The verbal fluency score was obtained by counting the number of responses made on the Instances and Similarities tests. The visual fluency score consisted of the number of responses to the Pattern Meanings test. The total fluency score was the sum of the verbal fluency score and the visual fluency score. The remaining three pretest dependent variables were a visual uniqueness score, a verbal uniqueness score, and a total uniqueness score.

The uniqueness scores for each individual were obtained in the following manner: For each stimulus item in a procedure, a frequency distribution was constructed indicating the number of children in the total sample of 96 who gave a particular response to that item. In other words, a score of 1 was earned by a response given only once among all the *S*s, a score of 2 to a response emitted twice,

This study is based on the author's doctoral dissertation completed at the University of Miami, Florida.

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and so forth. Thus, the lower the *S*'s score, the more uncommon and original his responses.

Each individual was then assigned a uniqueness score (either verbal or visual) which was the mean frequency of his responses given to all stimulus items of a given test. The total uniqueness score was the sum of the verbal uniqueness score and the visual uniqueness score.

Following training, difference scores were obtained by subtracting the posttest verbal, visual, and total fluency scores and the posttest verbal, visual, and total uniqueness scores from their parallel pretest scores.

The pretraining uniqueness and fluency scores were compared by ANOVA designs to evaluate the preexisting effects of sex, and to test for any differences between the randomly selected OT and RT groups before the introduction of training. An ANOVA was conducted on the fluency and uniqueness difference scores to assess the effects of training.

Pretraining

The only significant finding that emerged from the pretraining data was that females emit a greater number of responses to similar stimuli than did males. This is in keeping with Oetzel's (1962) review indicating that 23 of 26 studies cited in the area of language development showed girls to be significantly higher than boys in verbal fluency.

Posttraining

Uniqueness. The results of the present experiment strongly support the hypothesis that originality training facilitates the production of original responses in elementary school children. These findings are congruent with the research on the effects of originality training on college students. Similar results on uniqueness scores were obtained for both the verbal and visual procedures following training. Although the results of the originality training are basically similar for the verbal and visual modes of presentation, there are some differences, which point out the advantages of assessing verbal and visual materials separately.

Fluency. One surprising significant finding of the present study was the increase in the frequency of responses following originality training. Although several authors have hypothesized and found a relationship between fluency and creativity or originality, most suggest that giving a greater number of responses raises the probability of emitting a higher number of original responses. However, the findings of the present investigation suggest that perhaps the converse of this is true. In other words, the person who is more original also tends to give a greater frequency of responses. This idea is based on the fact that the group who received repetition training gave the same number of responses as the originality training group before training, but gave significantly less following training. A possible explanation is that the originality training procedure which requires the *S* to emit different responses to the same stimulus also requires greater productivity than repetition training. The latter procedure, on the other hand, actually inhibits productivity by requiring only one response. It therefore seems likely that not only is the emission of unique responses reinforcing, but the emission of one response (i.e., RT) is negatively reinforcing, thus inhibiting fluency in posttraining tasks. Therefore, the findings of the present investigation suggest that the Maltzman et al. training procedure is effective, at least in part, by increasing motivation to respond.

If original thinking is self-reinforced operant behavior, then why is it so difficult to find original work, especially in school and college? One apparent answer relates to the student's having been told consistently that he should think, but being reinforced only when his thinking produces the right answer. It has also been suggested that creative originality most often goes unrewarded; competitive striving for academic grades on the other hand tends to breed conventionality. If the classroom teacher encourages parroting and exerts a dampening effect upon the associational freedom essential to the creative mode of thinking, originality training is of little educational relevance (Wallace & Kogan, 1965).

Previous research suggests that original behavior goes relatively unreinforced or is even punished in our school programs. To combat this, we must design effective ways of furthering creative behavior. Some researchers have recommended that "bad" ideas should be reinforced as well as "good" ones, and they have shown that performance on creative tests can be improved by the use of reward and specialized training, even at the preschool level. It follows, therefore, that originality training should begin as early as possible in the educational process and become an integral part of that process.

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